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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,346	03/26/2001	Laurent Desclos	A7831	6357

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EXAMINER	
NGUYEN, DUC M	
ART UNIT	**PAPER NUMBER**
2685	

DATE MAILED: 05/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/816,346	DESCLOS, LAURENT	
	Examiner	Art Unit	
	Duc M. Nguyen	2685	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *24,25,28-33 and 36-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *45 and 46* is/are allowed.

6)☒ Claim(s) *24,25,28,29,31-33,36-37,39 and 41-44* is/are rejected.

7)☒ Claim(s) *30,38 and 40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is in response to applicant's response filed on 4/27/05. Claims 24-25, 28-33, 36-46 are now pending in the present application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims **24-25, 32-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Takahashi et al** (US 4,864, 644) in view of **Adan** (US 6,515,560).

Regarding claim **24, Takahashi** discloses a mixer circuit comprising :

- mixing means for mixing first input (LO) and second input (RF) to produce an output IF signal which would inherently produce sum and different frequency output signals as claimed (see Fig. 6 and col. 2, lines 55-68);
- an inductive load for providing a variable load on said mixing means as claimed (see Fig. 6 and col. 1, lines 52-56).

However, **Takahashi** is silent on whether the variable inductor is an "active" inductor. However, it is noted that utilizing an active inductor comprising a FET as a variable inductor is well known in the art as disclosed by **Adan** (see Figs. 1-5 and col. 3, lines 15-20). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the above teachings of Adan to Takahashi, for

providing an "active inductor" comprising a FET as claimed, for improving the mixer performance by utilizing advantages of the active inductor such as size and cost (see Adan, col. 5, lines 55-67).

Regarding claim **25**, the claim is rejected for the same reason as set forth in claim 24 above. In addition, Adan discloses MOSFET as claimed (see Figs 1-5).

Regarding claim **32**, the claim is rejected for the same reason as set forth in claim 24 above.

Regarding claim **33**, the claim is rejected for the same reason as set forth in claim 25 above.

2. Claims **28, 36, (43-44)/36** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** (US 5,170,500) in view of **Tanji** (US 6,198,352), and further in view of **Takahashi** and **Adan**.

Regarding claim **28, Broderick** discloses a transceiver comprising

- a first amplifier (see Fig. 2, ref. 21);
- a first mixer (see Fig. 2, ref. 22), wherein it is clear that the mixer would inherently produce sum and difference frequency signals as claimed;
- a first IF amplifier (see Fig. 2, ref. 24).

Here, although **Broderick** is silence on an input matching and an output matching for the amplifier, it is noted that utilizing such matching impedances for the amplifier is well known in the art as disclosed by **Tanji** (see col. 2, lines 1-15), for stability purpose due to impedance matching. Further, although Broderick is silence on

an active inductive load for the mixer, it is noted that using such active inductive load would obvious to one skilled the art as disclosed by **Takahashi** and **Adan** (see claim 24 above), for reducing the distortions. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to incorporate the above teachings of Tanji, Adan and Takahashi to Broderick, for providing active matching as claimed in order to prevent instability caused by impedance mismatch, and for providing an active (variable) load as claimed, for reducing distortions to improve the performance of the transceiver.

Regarding claim **36**, the claim is rejected for the same reason as set forth in claim 28 above.

Regarding claims **(43-44)/36**, the claims are rejected for the same reason as set forth in claim 36 above. In addition, Adan discloses active inductive loads comprises FETs and MOSFETs as claimed (see Figs. 1-5).

3. Claims **29, 31, 37, 39, 41-42, (43-44)/37** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Broderick** in view of **Tanji, Adan** and **Takahashi** and further in view of **Cheng** et al (US 5,757,099).

Regarding claim **31**, **Broderick** as modified would disclose all the claimed limitations, see claim 28 above, except for a limiter. However, it is noted that utilizing several stage limiters prior to mixer is well known in the art, for preventing saturation of the mixer. Further, utilizing an adjustable active inductance for limiting magnitude of the limiter is known as disclosed by **Cheng** (see col. 16, lines 50-56). Therefore, it would

have been obvious to one skill in the art at the time the invention was made to incorporate the above teaching of Cheng to Tanji, Takahashi and Broderick, for providing limiters prior to mixer for preventing saturation of the mixer, thereby improving the performance of the transceiver.

Regarding claim **29**, the claim is rejected for the same reason as set forth in claim 31 above. In addition, since **Broderick** discloses a transceiver, and since the transmitter of the transceiver can be implemented as a reverse process of the receiver (which comprises a second IF amplifier, a second amplifier, a second limiter and a second mixer), it would have been obvious to one skill in the art at the time the invention was made to further modify the above teachings of Yamaguchi, Tanji, Takahashi and Broderick, for providing a transceiver with a transmitter as claimed, so that the fabrication of the transmitter and receiver of a transceiver can be simplified due to their symmetrical or common components of the transmitter and the receiver, for cost reduction.

Regarding claim **37**, the claim is rejected for the same reason as set forth in claim 29 above.

Regarding claim **39**, the claim is rejected for the same reason as set forth in claim 31 above.

Regarding claims **41-42**, the claims are rejected for the same reason as set forth in claim 36 above. In addition, **Adan** discloses active inductive loads comprises FETs and MOSFETs as claimed (see Figs. 1-5).

Regarding claims **(43-44)/37**, the claim is rejected for the same reason as set forth in claim 37 above. In addition, Adan discloses active inductive loads comprises FETs and MOSFETs as claimed (see Figs. 1-5).

Allowable Subject Matter

4. Claims 30, 38, 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claims 45-46 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

As to claims 30, 38, 45-46, the cited prior art fails to disclose or make it obvious a transceiver which comprises components as specified in the claim, and whereas the reference signal inputting to the first and second mixers is outputted from a buffer amplifier and a doubler with a bypass switch as specified in the claim.

Response to Arguments

7. Applicant's arguments with respect to claims 24, 28, 31, 32, 36, 39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Yamamoto et al** (US 6,066,993), Duplexer circuit apparatus provided with amplifier and impedance matching inductor.
- **Kobayashi** (US 5,821,825), Optically controlled oscillator.
- **Leifso et al** (US 6,211,753), Active tunable inductor.
- **Putzer** (US 3,624,514), Tuning circuit having common tuning element for three frequency ranges and self-oscillating mixer using same.
- **Fushimi** (US 6,282,252), Receiver for data transmission.
- **Hayashi et al** (US 5,726,613), Active inductor.
- **Kunikiyo** (US 6,737,944), Active inductor.

9. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (571) 272-7893, Monday-Thursday (9:00 AM - 5:00 PM).

Or to Edward Urban (Supervisor) whose telephone number is (571) 272-7899.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-7259.

Duc M. Nguyen

May 28, 2005